U.S. Department of Energy

ANALYSIS OF BENEFITS AND COSTS (ABC) GUIDELINE

VOLUME 1: A MANAGER'S GUIDE TO ANALYSIS OF BENEFITS AND COSTS

March 2008

Office of the Chief Information Officer
Associate CIO for Information Technology Planning, Architecture, and E-Government
Division of IT Capital Planning and Architecture
Washington, DC 20585

Version Control No. – FS-GU-FI01-022908

Title Page

Document Name: Analysis of Benefits and Costs (ABC) Guideline,
Volume 1: A Manager's Guide to Analysis of Benefits and Costs

Document Owner: Department of Energy
Office of the Chief Information Officer
Office of the Associate CIO for Information Technology Planning, Architecture, and E-Government
Division of IT Capital Planning and Architecture

Revision Date: March 2008
Original Date: June 1988

Effective Date: As of Approval Date

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Change History

The following information is being used to control and track modifications made to this document.

Section	Date	Description of Revision
Overall	March 2008	Updated organizational references and directive cites

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I. INTRODUCTION

Managers spend much of their time and effort planning for the future. These plans usually involve making decisions about how to spend scarce resources. This guideline explains a process which will aid managers in making these choices. This process, a structured approach to decision-making, is an Analysis of Benefits and Costs (ABC). ABCs are also known as Benefit-Cost, Economic or Investment Analysis. In particular, this guideline explains the usefulness of ABCs in making choices among competing alternatives concerning Information Resources Management (IRM).

1.1 THE ABC CONCEPT

ABCs are most concerned with choosing the best economic alternative—the most benefits for the dollars spent. ABCs are a useful tool for comparing the relative worth of proposed investments or projects when there is more than one way to satisfy an objective. An ABC examines and compares each alternative to determine which provides the most desired benefits for the least cost. ABCs are not simply a method for determining the least cost alternative, but are also a guide to identifying the most cost-effective alternative. ABCs can help in making the decision whether to pursue an investment or project and also assist in choosing between alternative approaches to accomplish the investment or project.

Examples

Each of us conducts an ABC (most often informally) whenever we make a decision in the marketplace. For example, the analyses involved in deciding whether to move to a new home involve the ABC concept. Some of these decisions and related ABCs are illustrated in Decisions 1 and 2, below.

Decision #1—Deciding to Move

Assume that a family has outgrown its present home. The first question the family needs to answer is what are the family needs that their present house fails to provide? To satisfy these needs, the family must decide whether to move to a new house or possibly expand their current home. Choosing the best alternative requires analyzing the benefits and costs of each one and comparing the results.

The benefits of a new house include a warranty on the heating system, new kitchen appliances, and being able to choose the carpet and paint colors. The benefits of building an addition to the present house include avoiding the trouble and the cost of moving and less disruption to the family's friendships. Either alternative could offer better schools, more convenient shopping, a shorter commute, etc.

The costs to move to a new house include selling expenses of the existing dwelling, purchase price, closing costs, hiring a moving company, and having the utilities connected. The costs of expanding the existing house include the architect's design fee, the materials and labor for construction, permit and license fees, and a home improvement loan.

Once the benefits and costs have been identified, the family can use this information in making a more educated decision among the various alternatives.

Decision #2—Choosing Which House to Buy

Assuming that the family decides to purchase a new house, they usually do not buy the first one they see. The ABC concept can help them in making this decision.

In addition to those benefits identified in Decision #1, other benefits may include the type of heating and cooling systems, the size of the lots, the length of the warranties, the various builders' reputations for quality and timely completion of homes, the proximity of the houses to family-identified needs such as shopping, schools, tennis courts, etc.

In addition to the costs identified in Decision #1, other costs to be considered in making a choice could include the interest rate for each mortgage; the purchase prices, including the costs of desired features and closing costs.

After identifying the benefits and costs of each alternative new house, the family can use this information in deciding which new house is the best choice for them. Essentially, whether or not the family is consciously aware of it, they used the ABC concepts in deciding on the choice of a new home.

1.2 ANALYSIS OF BENEFITS AND COSTS DEFINED

Analysis of benefits and costs is a systematic discipline for comparing alternative ways to satisfy an objective. ABCs provide a structured framework for identifying alternatives, organizing data, and making decisions. The ABC process described in Chapter II includes:

- Identifying all reasonable alternatives for satisfying a stated objective. (A reasonable alternative is both technically and operationally feasible.)
- Identifying all benefits and costs of each alternative, over the investment or project lifecycle.
- Determining when the benefits and costs will occur.
- Comparing alternatives.

The structured framework ABCs provide is useful to managers in a variety of different situations. ABCs are a tool by which factors affecting a decision are qualified and quantified to assist decision-makers. Using ABCs in making decisions assures that the required information is gathered and analyzed. ABCs do not eliminate all uncertainty, but they do help to clarify the impact of choosing among alternatives.

1.3 THE MANDATE FOR ABCs IN IRM DECISION-MAKING

The value of using ABCs as an aid to decision-making has long been recognized throughout the Federal Government. Early use of ABCs applied to major construction and weapons projects in the Department of Defense. Subsequently, information resources have become a major investment in most Government operations. ABCs provide a tool for the Government to evaluate alternative investments in information resources.

An early initiative for using ABCs in IRM decisions came from the Federal Information Processing Standard (FIPS) Publication 64. The National Institute of Standards and Technology (NIST) introduced the idea of applying ABCs to the comparison of alternatives at the feasibility stage of a system lifecycle. FIPS 64 also suggested that managers use ABCs when making the decision to lease or purchase commercial software or hardware. The Office of Management and Budget (OMB) now requires an ABC for every major IRM investment or initiative per the Clinger-Cohen Act of 1996. This requirement appears in OMB Circular No. A-11, *Preparation, Submission, and Execution of the Budget, Part 7, Planning, Budgeting, Acquisition, and Management of Capital Assets* and in OMB Circular No. A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*.

The Department of Energy recognizes the utility of ABCs as a decision support tool. This guideline provides a means for integrating ABCs into the IRM decision process and suggests how ABCs can fit within the management processes now used by the Department.

Volume I, *A Manager's Guide to ABCs,* of the guideline is written for managers with responsibility for IRM decisions. Volume 2 is addressed primarily to analysts who will conduct ABCs. Managers may find the detailed discussion in Volume 2, *An Analyst's Handbook for ABCs,* a useful reference to understand the mechanics of the ABC process.

1.4 USES OF ABCs

ABCs are useful at several stages in an investment's or project's lifecycle. There are five points in the lifecycle of an IRM investment or project where an ABC, or a modified version of it, provides extremely useful information:

- The initial decision to proceed with an investment or project (Investment/Project Initiation).
- The selection among alternative methods of meeting requirements (Investment/Project Development).
- The selection of the method of acquisition (Budget Formulation).
- The evaluation of vendor/contractor proposals (Acquisition/Implementation).
- Post-implementation monitoring (Review/Evaluation).

An ABC at these points provides information to decision-makers at key times in an investment or project lifecycle. As such, this guideline is intended to help local managers improve their decision-making abilities at these stages. It is not intended to address reporting requirements that may be imposed by external organizations during these investment or project stages.

1.4.1 Investment/Project Initiation

When an investment or project is first identified, an ABC is useful in analyzing whether to proceed with the investment or project (Go/No-Go decision). ABCs at this stage are rough approximations of the benefits and costs of an investment or project compared to maintaining the present system. For example, suppose an organization is responsible for collecting and updating certain information. The manager may perceive that it would be more efficient to develop an automated system to keep this information. An ABC would compare the cost of continuing to collect and maintain the information manually versus the cost of automating or even discontinuing the activity. The cost estimate for the automated alternative would be rough, perhaps based on industry averages. This type of estimate is adequate at this stage. The two alternatives have similar benefits in accomplishing data collection and storage. Should additional benefits occur from automation, the benefits should be identified and expressed in terms of quantifiable measures to the extent practical.

When the results of the ABC indicate that automating is more costly than the present system (status quo), a decision not to proceed may be warranted. Occasionally, for other compelling reasons (e.g., legislated requirements, mission-essential factors, large initial outlays), the consideration of more costly alternatives may be required. However, if the analysis indicates that automation might prove more beneficial than the current method, the decision to proceed with further analysis is justified. The ABC can point to both the best decision and provide justification for further use of resources to develop the investment or project.

Per guidelines in OMB Circular No. A-11, Part 7, OMB requires the development of three alternatives in addition to the status quo alternative.

1.4.2 Investment/Project Development

A set of alternatives which meet the investment's or project's requirements are identified. This entails listing everything the new system must do in order to meet the needs of the organization. This step is traditionally referred to as performing a requirements analysis.

These alternatives specify different technical solutions to meet the requirements. For example, one alternative might look at using a mainframe computer while another would use linked minicomputers. Another alternative might use different types of software. The analyst should consider as many reasonable alternatives as possible. However, it may be necessary to limit the alternatives considered in an ABC to avoid information overload for decision-makers. In these cases, the analyst must screen the number of alternatives to select the ones most appropriate for analysis.

The differences between alternatives are likely to affect both the benefits and cost. Therefore, it is prudent to analyze each alternative in as much detail as possible. This assures that the manager has all the relevant information regarding the effect of choosing one alternative over the others. If there is no way to quantify certain benefits, they should be carefully described. The more information available about each alternative, the more likely that the best decision will be made in selecting an alternative.

1.4.3 Budget Formulation

When an investment or project reaches the point that it is ready for inclusion in the budget request, the use of ABCs takes on a new emphasis. At this point an ABC can analyze different methods of acquisition strategies. Thus, it is primarily centered on an analysis of costs for the various proposed methods of acquisition. The ABC performed on financing alternatives will provide the decision-maker with information about which method of acquisition (e.g., purchase, lease, lease-to-ownership, or lease-with-option-to-purchase) is most economical over the life of the system.

1.4.4 Acquisition/Implementation

When the decision is made to acquire or contract for an information resource capability, ABCs can be used in the performance of a cost comparison of the proposals received for the investment or project. Modified versions of ABCs are being used in the Department to analyze and compare these proposals. These consist of evaluating the technical capability of the proposals to fulfill the system specifications, as well as their lifecycle costs against predetermined criteria in selecting the proposal most advantageous to the Government.

1.4.5 Review/Evaluation

Finally, after an investment or project is implemented, ABCs can help monitor the results. A comparison of actual benefits and costs to the projected benefits and costs will help the manager evaluate whether the investment or project has met its goals. lf costs are higher and/or benefits are lower than projected, the manager may investigate whether a change is needed to bring the actual results closer to the projections. If ABCs are consistently used for post-implementation evaluations, patterns may emerge which will identify changes in assumptions that would make future ABCs more accurate. This information could be shared throughout the organization to improve future ABC efforts and decisions.

1.5 LIMITATIONS OF ABCs

An ABC is not a decision-making process; it is only one input to the decision-making process. The decision-maker must still interpret the results. ABCs involve assumptions, projections, and forecasts of future events whose outcomes cannot be predicted with certainty. In addition, ABCs are only as useful as the input data is valid. Decision-makers must also weigh the results of the ABC against other factors which have not been quantified. In short, ABCs are not a substitute for sound management judgment. Rather, they allow decision-makers to focus judgment more sharply on those areas where it is needed.

II. THE ABC PROCESS

The ABC process is a systematic methodology for comparing alternative means of meeting a specific objective. The process consists of eight steps.

1. Establish and define the goals or objectives.
2. Formulate appropriate assumptions.
3. Identify alternatives for accomplishing the objective.
4. Determine the benefits and costs of each alternative.
5. Evaluate alternatives by comparing their benefits and costs.
6. Test the sensitivity of the analysis outcome to major uncertainties.
7. Present the results.
8. Recommend an alternative.

Depending on the stage of the investment or project lifecycle, the emphasis of the ABC will fall on different steps in the process. For example, the emphasis of an ABC conducted at the initial stages of the investment or project lifecycle will emphasize the first three steps. On the other hand, ABCs for investments or projects approved in concept will emphasize steps 3, 4, and 5. While the emphasis of the ABCs may change, it is important to remember that all steps must be completed for each ABC.

2.1 DEFINE OBJECTIVES

The first step in the ABC process is defining the objectives. An objective is the decision or result the decision-maker wants the investment or project to achieve. Objectives are usually the result of trying to solve a problem or trying to take advantage of an improvement opportunity. Investment or project objectives should always be reviewed with the managers who will approve the investment or project.

Objectives should be specific for both organizational goals and capabilities. They should not, however, be so specific that they unnecessarily constrain or limit alternative solutions. Objectives should also change in light of the experience gained throughout the conduct of the ABC. It is not unusual for objectives to change several times during the ABC process.

The actual wording of the objective is critical. The wording should reflect a totally unbiased point of view concerning the method of solving the problem or fulfilling an opportunity. Objectives should contain enough detail so they provide a firm basis for selecting alternative methods of accomplishment. Objectives can also determine the extent to which existing methods and procedures should change. For example, the objective of an investment or project to update an existing system should specify what new requirements the updated system must meet. Stating the objective as “to update” (or upgrade) the current system would not suffice. Objectives should also contain enough detail to allow for measurement of the results after the new system is in operation.

2.2 FORMULATE ASSUMPTIONS

Assumptions are explicit statements used to describe the present and future environment. Every analysis will require assumptions. Enough is not known about the future to avoid them. All assumptions must be identified so the decision-maker realizes the basis for alternatives.

Three rules to observe in making assumptions are:

1. Make assumptions only when they are absolutely necessary to bridge gaps in essential information.

2. Be certain the assumptions are realistic and stated positively.

3. Include only assumptions that affect the conclusions of the ABC. See Section 2.6 concerning sensitivity analysis for a discussion on testing the validity and impact of assumptions.

Three assumptions typically included in every ABC are the estimated future utilization of the IRM resource (i.e., workload), the length of time before the IRM resource becomes obsolete (i.e., lifecycle), and the period covered by the analysis (i.e., comparison period).

2.3 IDENTIFY ALTERNATIVES

The third step in the process is to identify all possible means for meeting the objective(s). Alternatives should satisfy the minimum requirement of meeting the stated objective. Within this conformity, there is considerable margin for staff imagination and creativity.

There is rarely just one way to attain a given objective. A number of alternatives usually exist for meeting a set of information resource requirements. At the very least, one alternative that should be considered is to maintain the current system. Examples of alternatives in IRM investments or projects include:

Hardware Alternatives:

- Present system (status quo) versus replacement.
- Mainframe with remote nodes/terminals.
- Centralized versus distributed (decentralized) processing.
- Mini/microcomputer network.
- Different vendors.

Software Alternatives:

- Continuation of current services and methods.
- A new system that meets only the most important of the identified requirements (i.e., a scaled-down version that meets only a subset of requirements). If a scaled-down alternative is not possible, the ABC should so state.
- A new system that meets all the requirements.
- A second system that meets all the requirements, but uses a different approach.
- Phased implementation.
- Conversion of existing software.

Acquisition Alternatives:

- The purchase alternative - buying a system.
- The lease alternative - making regular payments for the use of the system.
- The lease-with-option-to-purchase alternative - making regular payments until a certain point at which time a lump sum may be paid to purchase the system and ownership passes to the Government.
- The lease-to-ownership alternative - making regular payments until a point at which ownership passes to the Government.

Implementation Alternatives

- Contracting for system development, operations, maintenance, and/or services.
- Contractor developed/in-house operated.
- Contractor developed/contractor operated.
- Timesharing from commercial sources.

The type of alternatives that are appropriate to develop and evaluate will depend on the particular decision that is being made.

During the in-depth search for possible technical alternatives, involved staff must always be conscious of resource requirements. In particular, analysis should guard against the problem of "information overload" (i.e., the frequent observation that many managers have “an overabundance of irrelevant information” rather than a “lack of information”). In some cases, organizations may develop a number of alternatives which are individually weak or flawed. However, combining these alternatives may lead to a superior alternative with better potential to satisfy the organization's requirements. Encourage creative thinking and the development of as many alternatives as possible. Finally, keep in mind that the list of alternatives compiled in the beginning of the analysis are not always final. As the analysis proceeds, new and better alternatives might arise, while those not feasible within the funding, operating, or other constraints might be cut out. Brief notes documenting those alternatives that were identified, but subsequently found not to be feasible, is recommended.

2.4 ESTIMATE BENEFITS AND COSTS

This step is the heart of an ABC. The analyst must determine benefits and costs associated with the development and operation of each alternative. When there is an existing automated or manual system, the identification of costs and benefits associated with the present system (status quo) is the starting point for the analysis. The present system (status quo) must always be considered as an option/alternative in an ABC. In many cases, additional alternatives can be analyzed as changes to the current system. This simplifies the work required to identify benefits and costs for all individual alternatives.

After identifying baseline benefits and costs, the costs associated with each additional alternative must be fully quantified. The costs include the basic expenses of acquiring an information resource as well as the operational and maintenance costs. Costs are usually separated into three broad categories—sunk costs, nonrecurring (one-time) costs, and recurring costs. Sunk costs include all costs that have already been incurred and will not be affected by a decision to choose any one of the alternatives. Nonrecurring costs include those associated with the purchase of hardware or software or any one-time expense incurred such as site/facility construction. Recurring costs, on the other

hand, include lease payments, maintenance, operations costs, as well as the salaries and fringe benefits of staff associated with system operations.

The identification of costs is a collective enterprise within the organization. Program managers, IRM technical staff, and budget analysts must arrive at a consensus on the resource requirements of each alternative. There must be a shared understanding and appreciation of the techniques used through each step of cost identification.

At the same time as costs are being identified, the benefits associated with each alternative must be identified and, to the maximum extent possible, quantified by the organization. An analyst should always attempt to place a dollar value on the benefits for each alternative. Benefits can usually be separated into two major categories of benefits. Cost reductions are the result of improved system operations. Value enhancements are the result of additional functions or features of the investment or project.

Some benefits, however, escape easy quantification. The difficulty in assigning dollar values to items such as tighter management control, improved service, improved information handling, diminished risk of incorrect processing, better morale, better management decisions, and enhanced organizational image is recognized. However, every effort needs to be made to quantify these benefits whenever possible. There are a number of methods for assigning values to nonquantifiable benefits. They range from a simple ranking of the nonquantifiable benefits to methods that arrive at dollar values based on managers' input. Volume 2 of the ABC Guideline discusses these methods. However, the subjective valuation of benefits is only as good as the deliberations and discussions that lead to the scores.

Exhibits 1 and 2 show a representative listing of benefits and costs typically associated with IRM investments or projects. Please note that the benefits and costs in Exhibits 1 and 2 are not all-inclusive and that every ABC need not include all of these items. The appropriate set of items to include in each ABC is an important judgment made by the manager or analyst in every individual case.

EXHIBIT 1
TYPICAL BENEFIT CATEGORIES
FOR ALTERNATIVE IRM INVESTMENTS/PROJECTS

Acceptability
Accuracy
Adaptability
Availability
Compatibility
Efficiency
Maintainability
Manageability
Morale
Performance
Portability
Productivity
Quality
Reliability
Residual Value
Safety
Security
Service Life
Software Quality
Upgradeability
Versatility

EXHIBIT 2
TYPICAL COST CATEGORIES
FOR ALTERNATIVE IRM INVESTMENTS/PROJECTS

NON-RECURRING COSTS
(COSTS INCURRED ONLY ONCE)

EQUIPMENT PURCHASE (e.g., computing and/or telecommunications resources)

SOFTWARE PURCHASE

PERSONNEL (used only for investment/project development)
Salaries
Overtime
Fringe Benefits
Training
Travel

SITE PREPARATION

CONVERSION/PARALLEL OPERATIONS

OTHER (identify)

RECURRING COSTS
(COSTS INCURRED THROUGHOUT THE LIFECYCLE)

PERSONNEL
Salaries
Overtime
Fringe Benefits
Training
Travel

EQUIPMENT
(e.g., computing and/or communications resources)
Acquisition (e.g., lease, lease-with-option-to-purchase, lease-to-ownership)
Maintenance

SOFTWARE
Acquisition (lease or rental)
Maintenance/Enhancement

SUPPLIES
(e.g., office supplies, data processing materials, other miscellaneous expenses)

CONTRACTOR SERVICES
(e.g.; technical and consulting services, data entry support, operations support, timesharing services, facilities management, telecommunications network services)

SPACE OCCUPANCY
Building Maintenance
Building Rental or Lease
Office Furniture
Utilities (heating, air-conditioning, power)

OTHER OVERHEAD EXPENSES

OTHER (identify)

2.5 COMPARE ALTERNATIVES

Once the costs and benefits for each alternative are identified, it is necessary to express them in terms of present value (PV). The purpose of expressing costs and benefits in terms of present value is to account for the time value of money (i.e., a dollar today is worth more than a dollar in the future). Therefore, all costs and benefits in future years are multiplied by a discount factor to translate them into their present value. Discount factors decrease for each successive future year. After discounting each year's benefits and costs, the amounts are added to determine the total benefits and total costs for the investment or project lifecycle.

The first comparison of alternatives is to rank them according to their net present value (NPV). Net present value is calculated by subtracting the total present value cost from the total present value benefit of the investment or project. The higher an alternative's positive net present value, the more its benefits exceed its costs. From an economic analysis point of view, the investment or project with the highest net present value is frequently the most desirable.

Sometimes, however, that may not be the most logical decision. Mitigating factors, such as different nonquantifiable benefits among the alternatives, large initial cash outlays, budgetary constraints, manpower restrictions, etc., may require selection of an alternative that does not have the highest net present value. In these situations, the alternatives' net present values serve to establish a preliminary ranking of alternatives.

In some cases, it may be important to recover the initial costs of an investment or project as quickly as possible. Plotting the net present value of the alternatives for each year allows decision-makers to visually compare alternatives at any point in the lifecycle. It shows where the benefits equal the costs of the investment or project, typically called the break-even point. The graph also shows the length of time required to reach the break-even point, commonly called the payback period.

A third technique to evaluate alternatives is the benefit-cost ratio (BCR). The BCR is the present value benefits divided by the present value costs. The BCR provides a measure of the benefits obtained per dollar spent. It is particularly useful when comparing alternatives with costs, benefits, and lifecycles. BCR is a measure of the return relative to the size of the investment cost. BCR does not allow comparison of the magnitude of the returns from several alternatives.

2.6 CONDUCT SENSITIVITY ANALYSIS

Elements of uncertainty involved in an ABC must be examined to determine their effects and influence on the final recommendations. This examination is called sensitivity analysis.

By doing a sensitivity analysis, the analyst identifies:

- Those elements having a major effect on the results of the analysis.
- Whether the outcome of the analysis may change as a result of changing one or more assumptions.

Sensitivity analysis is a "what if" type analysis. The question that a sensitivity analysis asks is "How much difference does it make if we, the analysts and decision-makers, are incorrect?" In other words,

"How vulnerable are our results to a change in assumptions?" Sensitivity analysis requires recalculating the results using different values for critical assumptions.

In performing a sensitivity analysis, an investigation determines how the ABC results may change if there are changes in the system parameters or basic assumptions. Some elements to be examined include cost estimates; length of system life; volume, mix, or pattern of workload; requirements; and configuration of system or software.

2.7 PRESENT RESULTS

Once completed, the ABC is presented in a standardized, uniform manner. This will organize the findings for the manager and ensure that all important issues have been addressed. It is important to use standard formats so management can become familiar with techniques used and methods for displaying results. This will allow management to concentrate on the issues rather than trying to understand what techniques were used and what information is presented. In addition, the formats serve to simplify the presentation of results by clearly showing all data and supporting information.

Each organization should establish a standard method for presenting ABC results to decision- makers and senior level managers. Volume 2 provides a set of forms that show the type of information that needs to be displayed. Existing forms can frequently be adapted for reporting the results of ABCs.

2.8 SELECT ALTERNATIVE AND RECOMMEND COURSE OF ACTION

The obvious decision rule for making an economic choice between several alternatives is to choose the highest net present value. Sometimes, however, that may not be the most logical decision. Mitigating factors, such as those discussed in Section 2.5, may require selection of an alternative that does not have the highest net present value. In these situations, the alternatives' net present values serve to establish a preliminary ranking of alternatives.

III. DEPARTMENT OF ENERGY IRM DECISION-MAKING AND MANAGEMENT PROCESSES

The Department of Energy has several management processes in place that govern IRM planning and budgeting decisions. The application of ABCs is a tool to assist managers in their everyday decision-making and help them satisfy Department of Energy requirements. ABCs represent a tool that can be used within the framework of existing processes to arrive at better decisions. The major processes that employ IRM decision-making are long-range planning and budgeting.

3.1 LONG-RANGE PLANNING

Long-range planning includes strategic planning, program planning, the Capital Planning and Investment Control process, and Enterprise Architecture. Long-range planning provides a long-range perspective on requirements. Plans generally cover the current fiscal year, the budget year, the plan year, and four additional out-years. In this sense, investments or projects planned for four to five years in the future are included in the long-range plans. The planning process for long-range investments or projects is an appropriate place to apply an initial (rough-estimate) ABC. This type of ABC can support a decision regarding whether to proceed with the investment or project (Go or No-Go). ABCs for investments or projects at this stage, along with an assessment of the investment's or project's technical viability, will help organizations determine which investments or projects to put into the plan.

As an investment or project becomes more defined and moves closer to the plan year in successive plan cycles, alternative methods to meet the requirements can be investigated. At this stage, the ABC is more detailed and provides support for the second major process—the current budget cycle.

3.2 BUDGETING

At approximately the same time long-range plans are prepared, budget data for the nearer-term requirements are usually gathered. Information from the long-range plans is used to support budget requests for IRM investments or projects. The use of ABCs at this stage supports selection of the most desirable alternative for completing an investment or project. The ABC for this decision should be as extensive as necessary, given the size of the potential investment for the investment or project. The results of the ABC help make the decision and provide justification for inclusion of an investment or project in the budget. The cost analysis also supports the funds and/or staff resources being requested in the budget. Finally, the results of ABCs are very useful to compare the economic return on various investments and investments or projects that are being considered for funding.

An in-depth ABC conducted for the budget process will most likely provide a schedule for implementing the investment or project. A third type of ABC can be used to determine the method for acquiring the IRM resource. Commonly called a method of acquisition analysis, this ABC will help determine the most desirable way to acquire the resource (purchase, lease, lease-with-option-to-purchase, lease-to-ownership, etc.).

IV. SUMMARY

This volume, *A Manager's Guide to ABCs*, provides an overview of the concepts of analysis of benefits and costs. The guide encourages the use of ABCs when making decisions about information resources. This guideline does not advocate the need for a new management process or reporting requirements. Rather, ABCs are a tool to support management decisions. As a by-product, ABCs are also useful in meeting reporting requirements already established within the Department of Energy and for OMB. For a detailed discussion regarding the mechanics of conducting an ABC, refer to Volume 2, *An Analyst's Handbook for ABCs*.